LED Exposure
Next-gen technology in plate making

Cyrel® Solutions 2023

Frequent Questions around LED Exposure:

“Do we consider LED Exposure as the Next-gen Technology for Flexo Platemaking?”

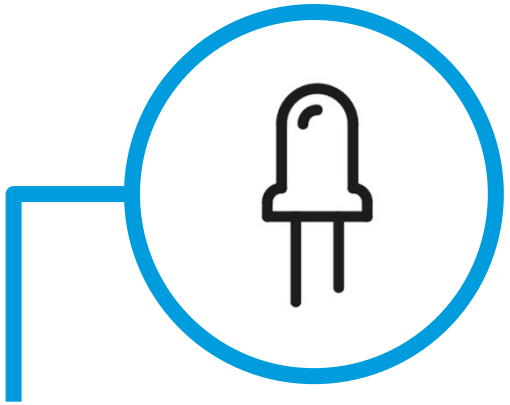
“Is it worth to invest into LED exposure systems?”

“How does LED exposure impact my day-to-day performance?”

LED - Market Overview

LED Exposure – Becoming an Industry Standard

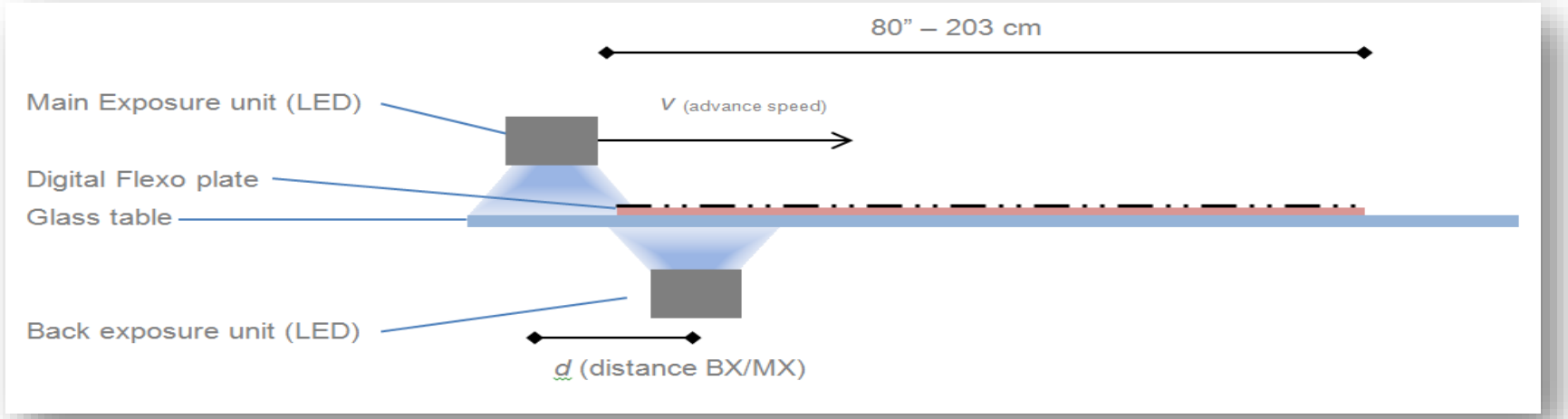
- Since 2016 UV LED has become a widely accepted method of exposing photopolymer flexo plates
- Around **500 Systems** installed **Globally** from leading Equipment OEMs



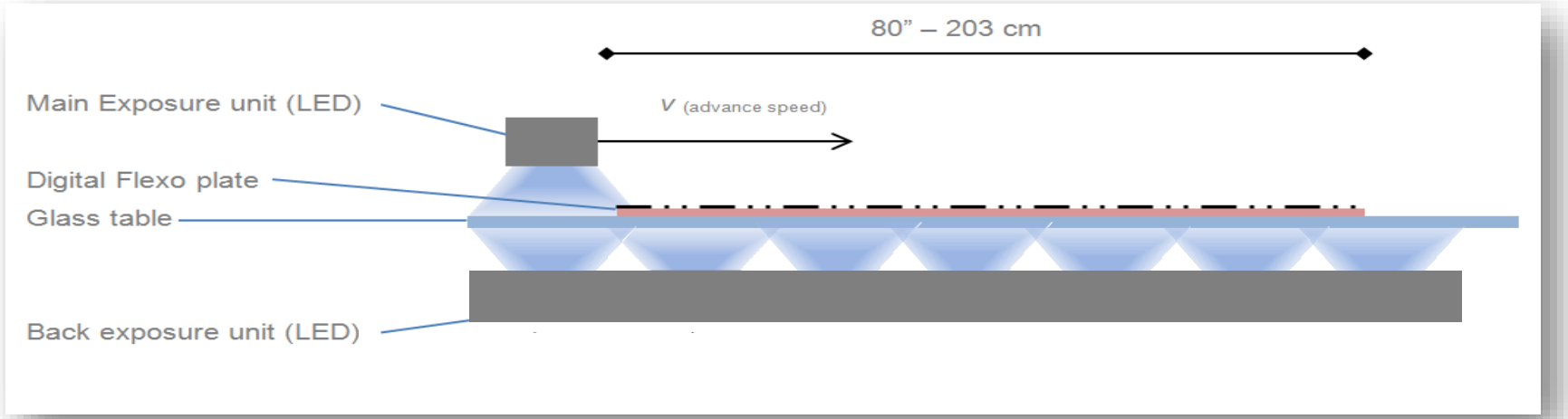
New developments are based on LED:

- Equipment - Full Automation Systems
- Screening technologies
- NEW LED photopolymers

LED FTD Exposure Systems – Available Concepts



180+ Plates certified Including Corrugated plates (112 - 276)



More concepts are on the way into the market.

Technical: Banklight vs. LED

Technical Differences: Banklight vs. LED systems

UV-A Tubes:

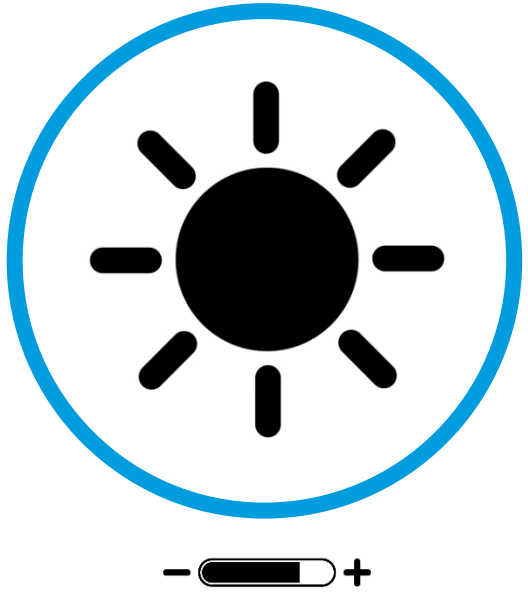
- 18 - 25 mw/cm^2
- Intensity variation 5 -25% due to location, temperature and aging
- Live time approx. 1000 hours

UV-A LEDs:

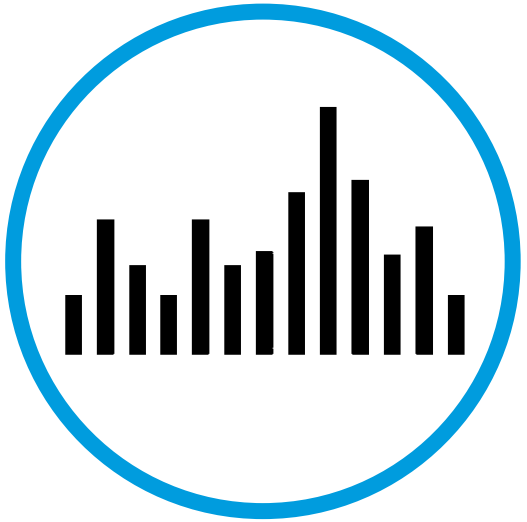
- 300+ mw/cm^2
- **Instant “ON”** calibrated and constant UV output
- Live time ~ 20.000+ hours (market feedback)

Technical Differences: Banklight vs. LED systems

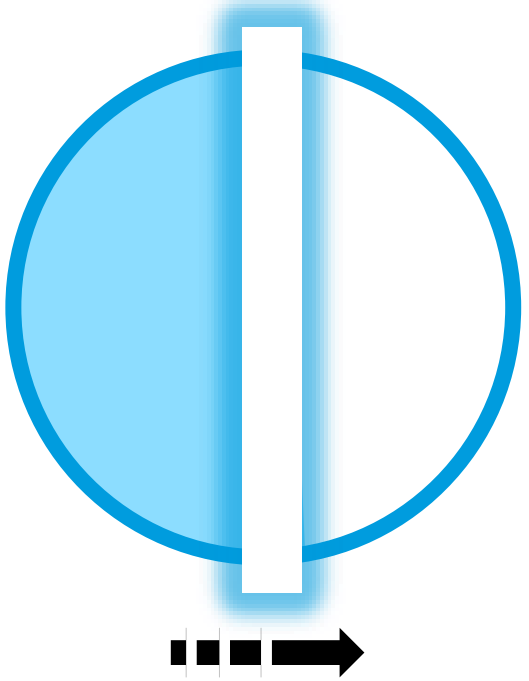
LED systems run at 15-20 times higher intensity



LEDs emit a narrower UV spectrum



LED systems typically scan-expose the plate vs. constant exposure



Technical Differences: Banklight vs. LED systems

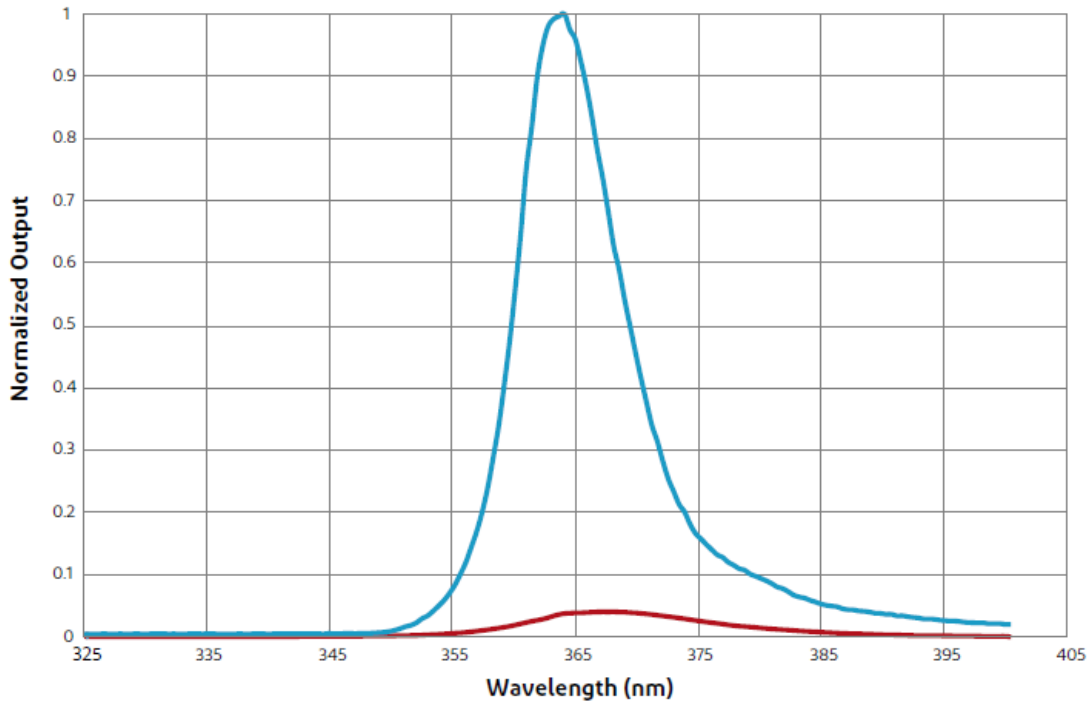


Figure 4: UV output spectra: Flourescent Bank vs. LED (approximation)
Source: DuPont internal analysis

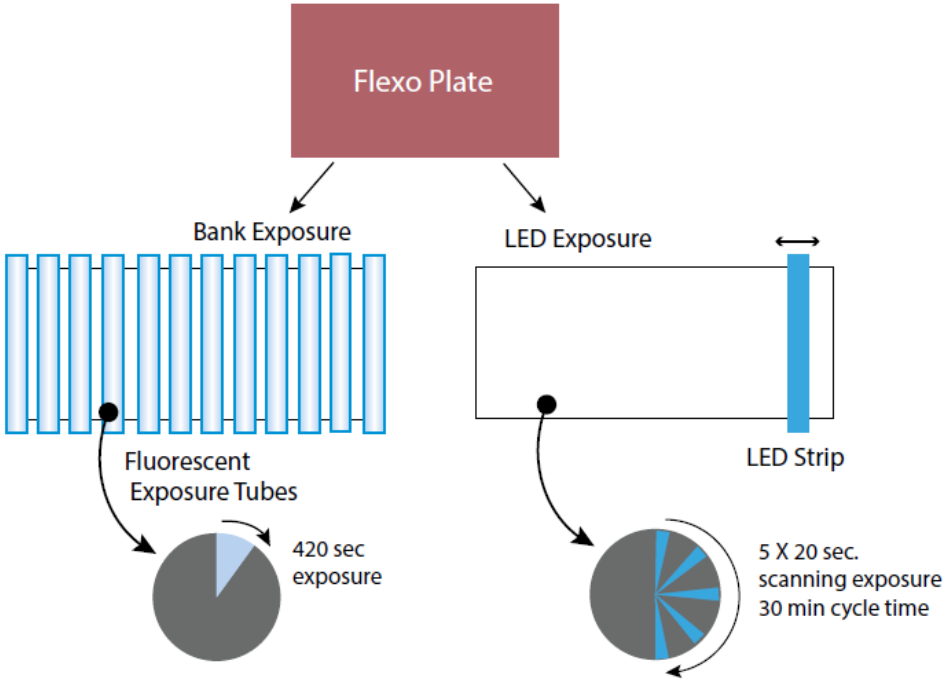


Figure 5: Constant Bank Exposure vs. Scanning LED Exposure
Source: DuPont internal analysis.

Bank Exposure: 20 mW/cm2, 420 sec (constant): **8.400 mJ/cm2**
LED: Output 300 mW/cm2, 5 passes, 20 sec (per pass), cycle time 26 min: **30.000 mJ/cm2**

Plates Optimized for LED Exposure

New plate formulations are optimized for LED exposure.

Access time and quality which are in perfect balance.

Precision, Consistency and fit with latest Screening developments

Part of Sustainable Workflow Solutions

Impact – Production Workflow

Simplifying Plate and Print Production

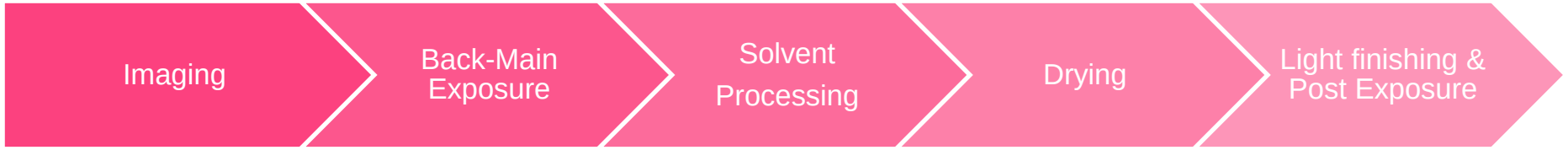
- No time loss for warm-up, changing, checking tubes
- Consistent results across all shifts and operators
- Combined main and back exposure
- High quality FTD plates with minimized oxygen impact
- Availability of new screening and automation technologies
- Less plate waste due to achieved production consistency
- Reduced downtime and setup waste on press
- Improved print quality

Simplified Workflows include LED Exposures

Bank Exposure + Solvent

6 Steps

LED Exposure + Solvent



5 Steps

LED Exposure + FAST Thermal processing

4 Steps

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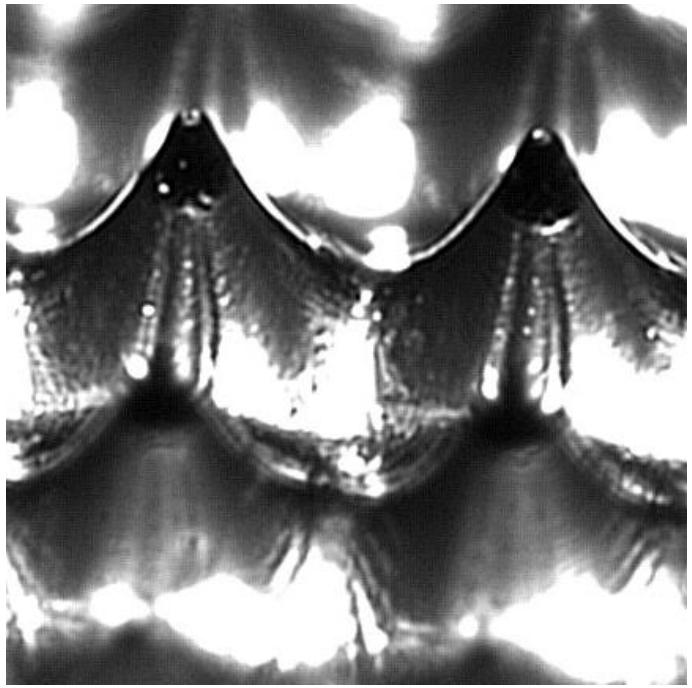
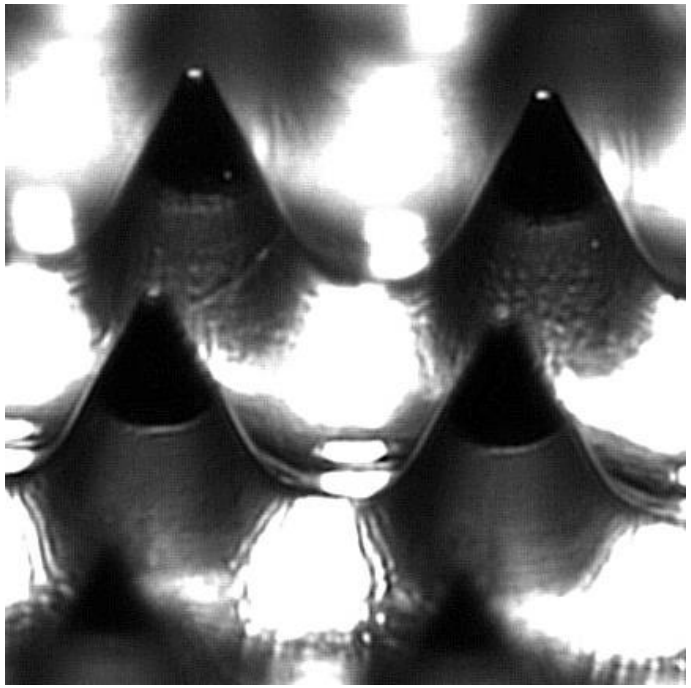
Impact – Printing Quality

Screenings developed for LED Exposure

4000ppi - 16 Pixel Highlight Dot



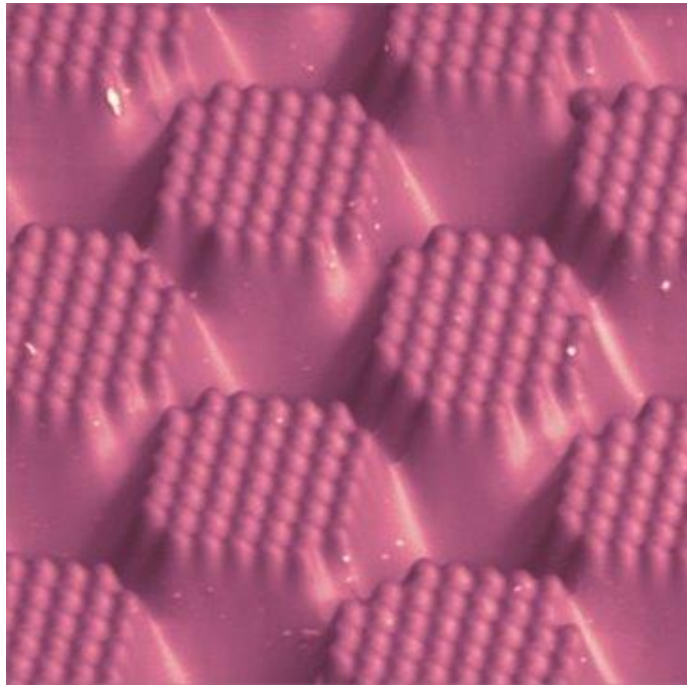
Standard Bank

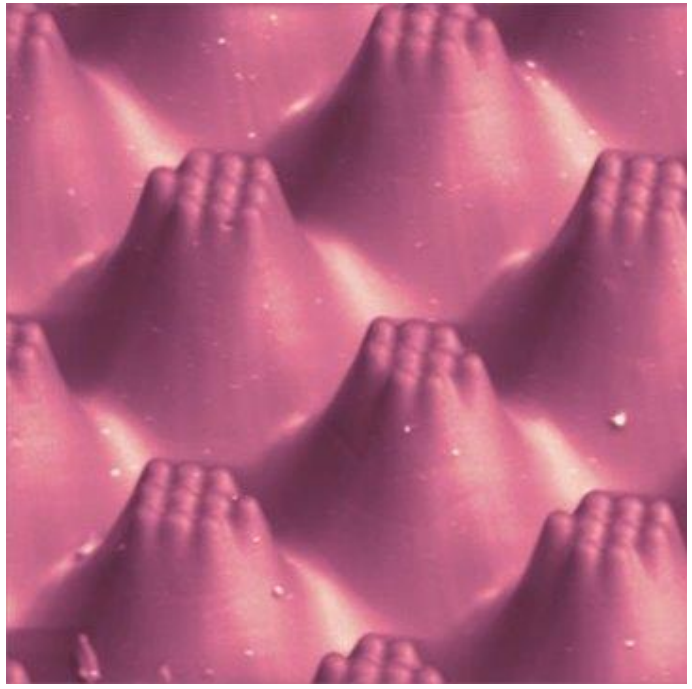


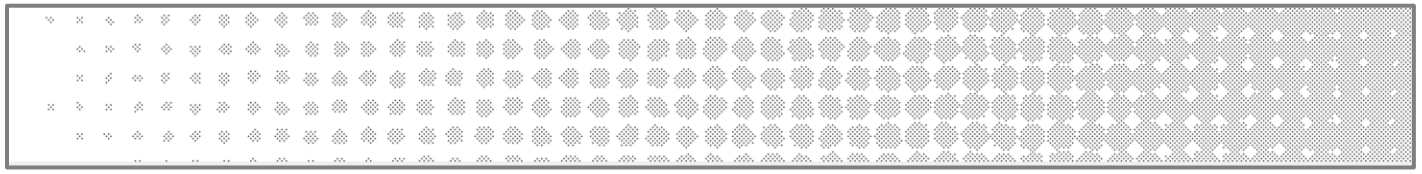
XPS LED

LED exposure create FTD plates with **minimized oxygen impact**

Screenings developed for LED Exposure





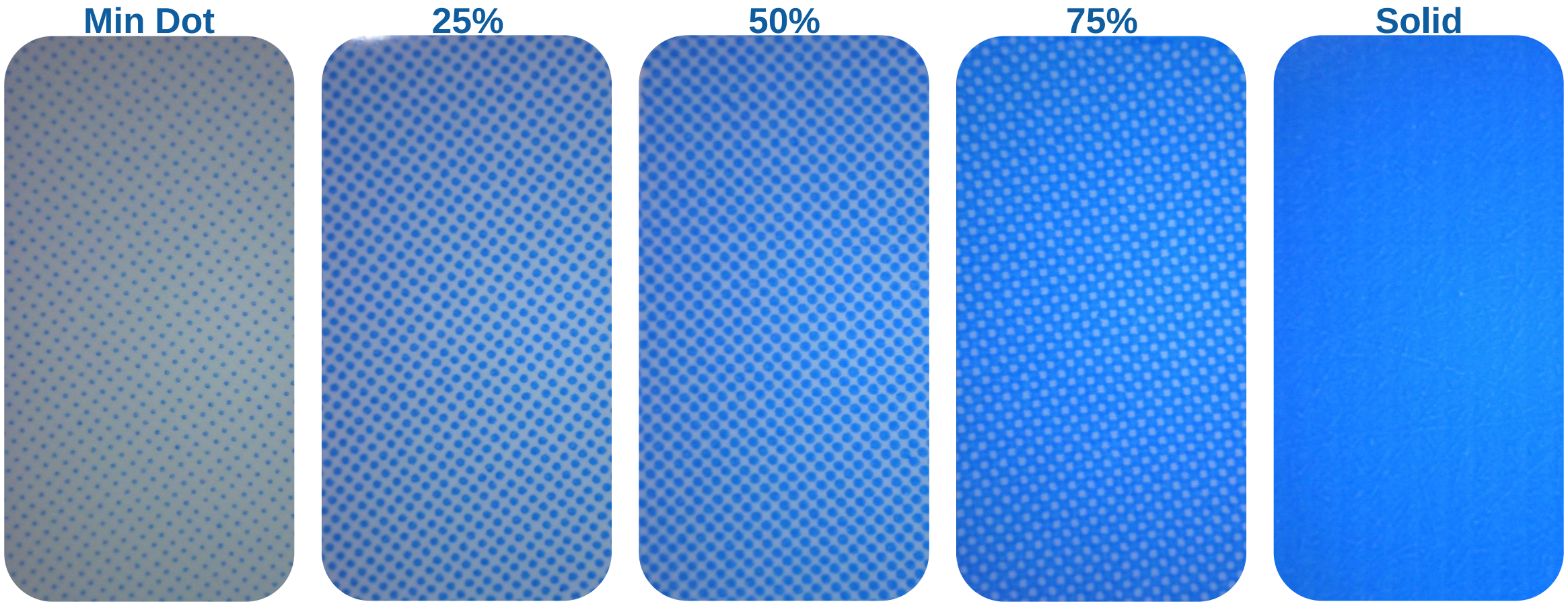


4000ppi - Crystal Screen on XPS

The closer 1:1 reproduction allows defined half-tone screens **across the entire tonal range**

LED Screen Technologies – Print Quality

Consistent Tonal Range:

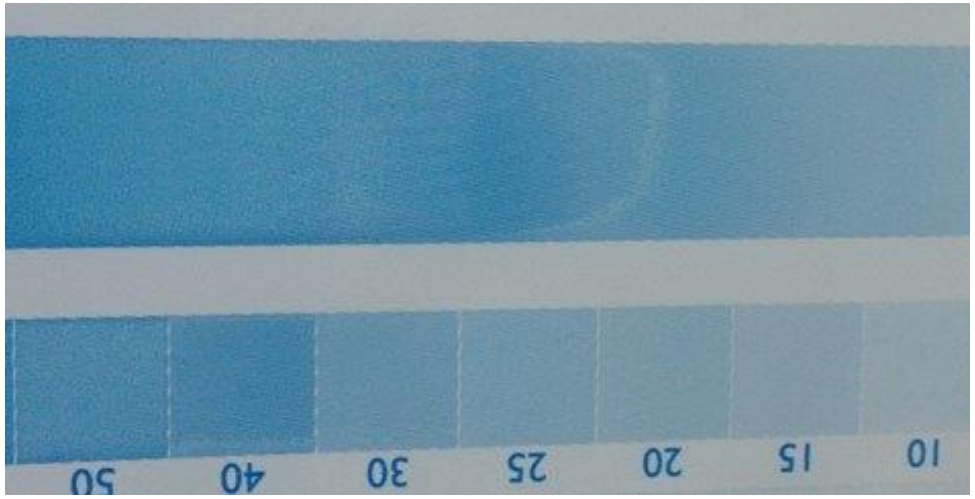


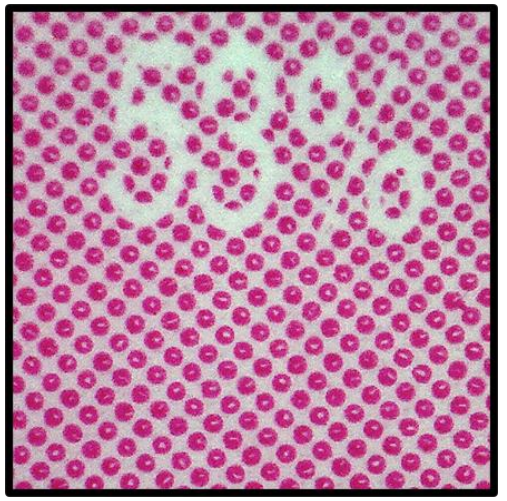
LED Screen Technologies – Print Quality

Standard

Circular

Screen

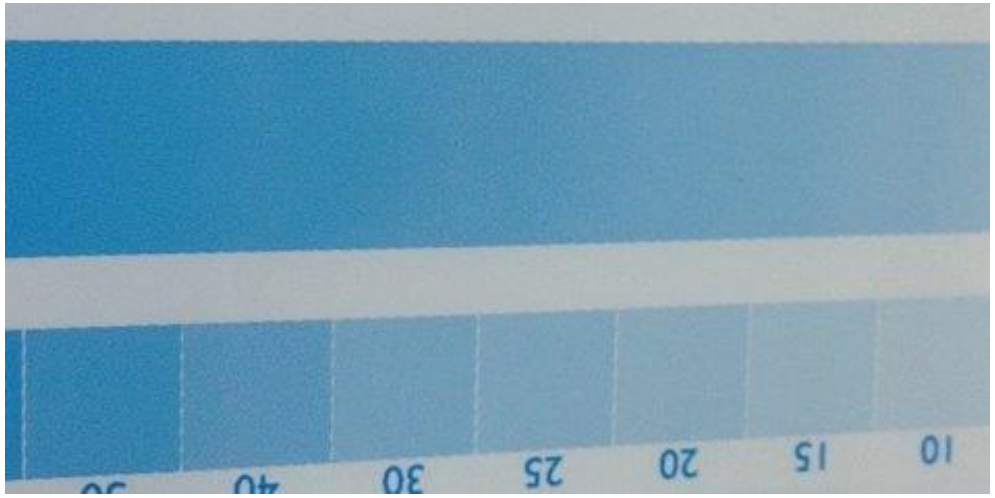




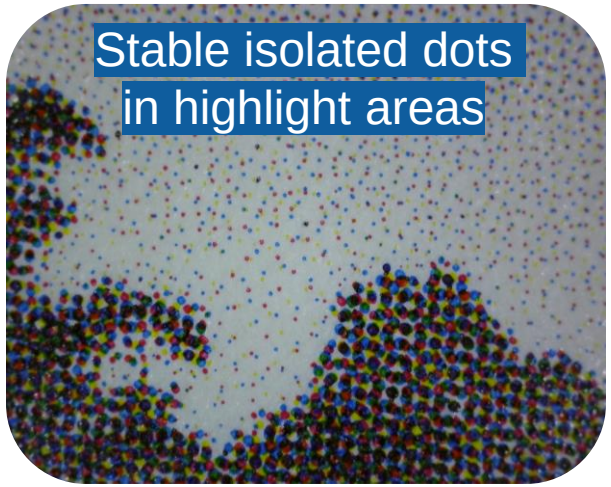
LED exposure

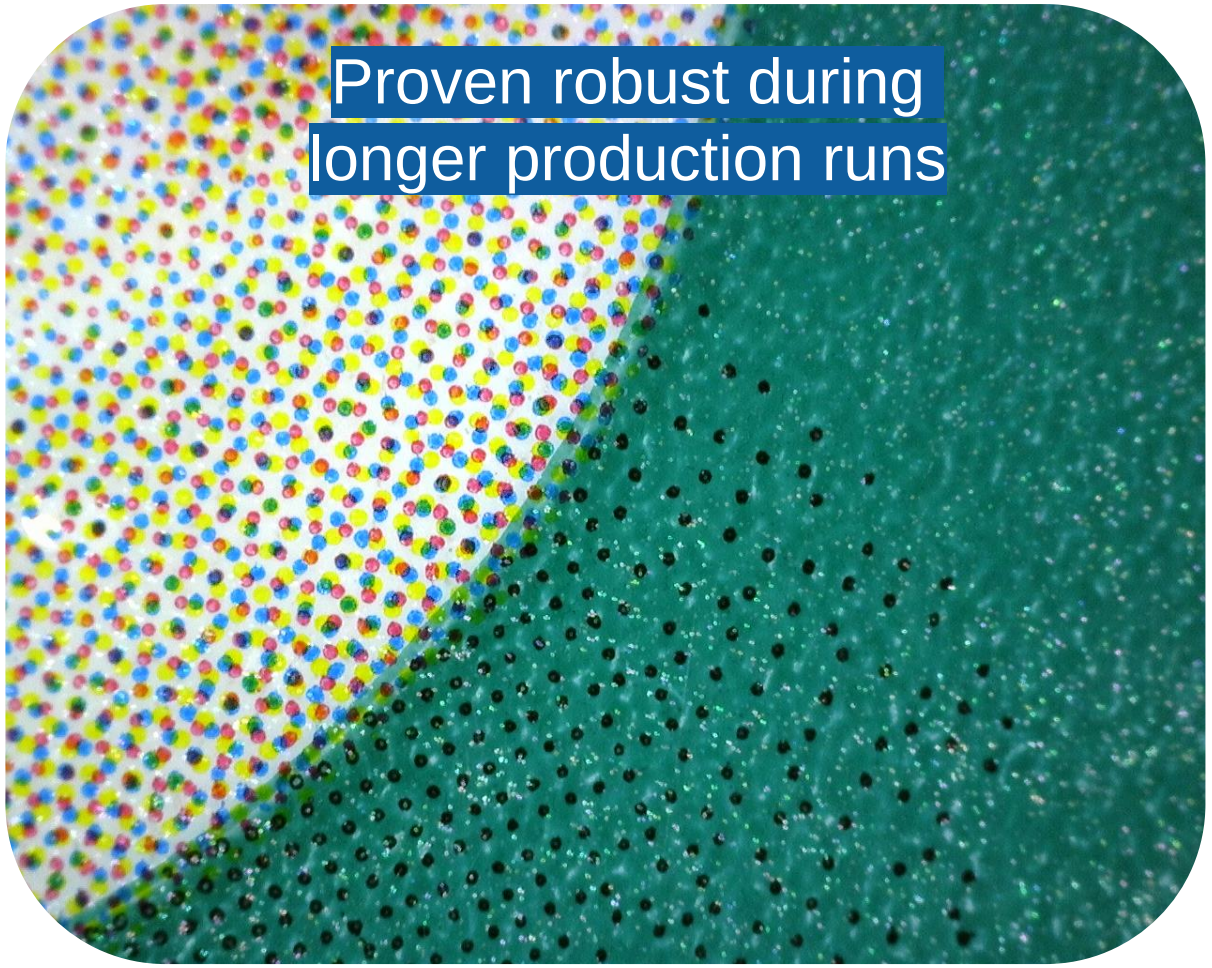
+ Haft-tone

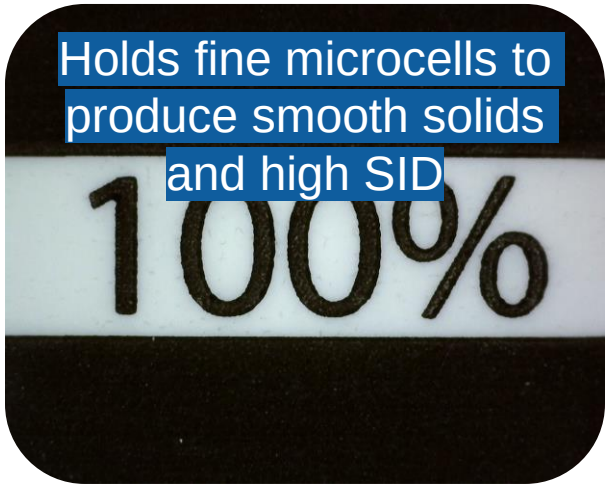
Screenings

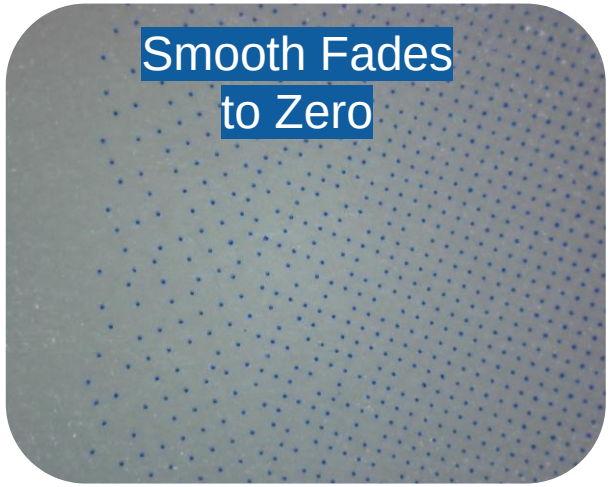


LED Screen Technologies – Print Quality









Pulled at 365.000 Meter

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Future Expectations …

A look into the future…

- Conventional exposure with UV-A tubes is still widespread and serves its purpose up to a certain level.

- In the future, traditional banklight exposure will be replaced more and more by LED exposure systems and new developments will be based on the LED exposure technology.

FTA 2022/ 23 Print Samples

Print Samples
DuPont™ Cyrel® Lightning LSH

FIA UK
FLEXOGRAPHIC
INDUSTRY
ASSOCIATION

2022
#1 Promotion
Print

DUPONT™

Print Samples
DuPont™ Cyrel® Lightning LFH

Thanks for your attention and time!

Speaker

Michael Louis Weber

Technical Service Leader EMEA

DuPont™ Cyrel® Solutions

Michael joined DuPont™ in 2017 as R&D Application Specialist Flexo. He supported various R&D projects and Flexo customers across EMEA. In his current assignment he is leading the EMEA Technical Marketing department including the Cyrel® Customer Technology Center in Neu-Isenburg, Germany.

Topic:

Technical Dialog - “LED Exposure – Next-gen Flexo Platemaking”
What is important and where is development headed, considering the needs of the modern printing industry.